WHAT IS CLAIMED IS:

1. A nitride-based light-emitting diode (LED), comprising:

a substrate,

a light extraction layer grown on the substrate, and

a nitride semiconductor epitaxy layer grown on the light extraction layer,

wherein the traveling path of the emitted light can be changed by the light extraction layer to avoid the absorption by the epitaxy layer and to emit from the diode to improve the external quantum efficiency, and the external quantum efficiency is improved by matching the refraction index between the light extraction layer and the substrate.

2. The LED as claimed in Claim 1, wherein the substrate is made of Al_2O_3.

3. The LED as claimed in Claim 1, wherein the substrate is made of SiC.

4. The LED as claimed in Claim 1, wherein the light extraction layer is made of a material selected from a group consisting of ITO, In_2O_3, TiO_2, ZrO_2,ZnS, ZnO, ZnSe, and MgO.

5. The LED as claimed in Claim 1, wherein the light extraction layer has the thickness T = 0.01-3μm.

6. The LED as claimed in Claim 1, wherein the light extraction layer has the width W = 0.1-10000μm.

7. A high power nitride-based light-emitting diode (LED) having a sacrificial layer, comprising:

a substrate,

a sacrificial layer grown on the substrate,

a nitride semiconductor epitaxy layer grown on the sacrificial layer,

a substrate with high thermoconductivity, and

a binding layer, for binding the light-emitting structure of the nitride semiconductors and the substrate with high thermoconductivity,

wherein the sacrificial layer in the light-emitting structure is entirely etched away with a chemical solution used in a chemical etching process, and the resulted nitride epitaxy structure is placed on the substrate with high thermoconductivity so that the diode can operate at high electrical current to improve external quantum efficiency.

8. The LED as claimed in Claim 7, wherein the substrate is made of Al_2O_3.

9. The LED as claimed in Claim 7, wherein the light extraction layer is made of a material selected from a group consisting of ITO, In_2O_3, TiO_2, ZrO_2,ZnS, ZnO, ZnSe, and MgO.

10. The LED as claimed in Claim 7, wherein the sacrificial layer has the thickness of 0.01-3μm.

11. The LED as claimed in Claim 7, wherein the sacrificial layer has the width 0.1-1000μm.

12. The LED as claimed in Claim 7, wherein the substrate with high thermoconductivity has thermoconductivity higher than 150W/m-k.

13. The LED as claimed in Claim 7, wherein the substrate with high thermoconductivity is made of one of the following materials: semiconductor, metal, or alloy.

14. The LED as claimed in Claim 7, wherein the binding layer comprises at least one of the following materials: Al, Ag, Au, Ni, Cu, Pt, Ti, or Pd.

15. The LED as claimed in Claim 7, wherein the binding layer is fabricated using sputtering, deposition, or electroplating.

16. The LED as claimed in Claim 7, wherein the Al_2O_3 substrate is rid of by using a chemical etching process.